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Tarefa Básica: Coeficientes Binomiais

Kaic Malta CT11 348

Triângulo de Pascal e Tartaglia

1.

01. $\binom{8}{3} = \frac{8!}{3!(8-3)!} = \frac{8 \cdot 7 \cdot 6 \cdot 5!}{3 \cdot 2 \cdot 1 \cdot 5!} = 56$ b)

02. $\binom{200}{198} = \frac{200!}{198! \cdot 2} = 19.900$ a)

03. $\binom{n-1}{2} = \binom{n+1}{4}$

$2 + 4 - 6 = 0$

$\frac{3}{2} + \frac{1}{3} = 4$

$\frac{2}{1} \cdot \frac{3}{1} = 6$

$V = \{1, 2, 3\}$

$n = 1$ ou $n = 2$ ou $n = 3$

04. $\binom{20}{13} + \binom{20}{14} = \binom{21}{14}$

05. $\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \ldots + \binom{n}{n} = 2^n$

06. a) $\sum_{p=0}^{10} \binom{10}{p} = 2^{10} = 1024$

b) $\sum_{p=0}^{9} \binom{10}{p} = \binom{10}{0} + \binom{10}{1} + \ldots + \binom{10}{9}$

$\binom{10}{0} = 1$ $2^{10} = 1024$ R: $1024 - 1 = 1023$

c) $\sum_{p=2}^{9} \binom{9}{p} = \binom{9}{2} + \binom{9}{3} + \ldots + \binom{9}{9}$

$\binom{9}{0} + \binom{9}{1} = 1 + 9 = 10$ $2^9 = 512$ R: $512 - 10 = 502$

d) $\sum_{P=4}^{10} \binom{P}{4} = \binom{4}{4} + \binom{5}{4} + \ldots + \binom{10}{4}$

$\binom{8}{4} = 70$
$\binom{9}{4} = 126$
$\binom{10}{4} = 210$

$\oplus$

$\binom{4}{4} = 1$
$\binom{5}{4} = 5$
$\binom{6}{4} = 15$
$\binom{7}{4} = 35$

R: 462

$\frac{9.8.7.6}{4.3.2.1} = 126 \qquad \frac{6.5.4.3}{4.3.2.1} = 15$

$\frac{10.9.8.7}{4.3.2.1} = 210 \qquad \frac{7.6.5.4}{4.3.2.1} = 35$

e) $\sum_{P=5}^{10} \binom{P}{5} = \binom{5}{5} + \binom{6}{5} + \ldots + \binom{10}{5}$

$\binom{5}{5} = 1$
$\binom{6}{5} = 6$
$\binom{7}{5} = 21$

$\oplus$

$\binom{8}{5} = 56$
$\binom{9}{5} = 126$
$\binom{10}{5} = 252$

R: 462

$\frac{7.6.5.4.3}{5.4.3.2.1} = 21 \qquad \frac{10.9.8.7.6}{5.4.3.2.1} = 252$

07. $\sum_{K=0}^{m} \binom{m}{k} = 512$ **m = 9 e)**